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AUTHOR Tenopir, Carol
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ABSTRACT

Many small and medium-sized companies see a library as a luxury they cannot afford. They may have room set aside with a small collection of books, periodicals or reports, yet the use of this often unsupervised storage system is minimal at best. These same companies, however, usually place great importance on maintenance of and access to correspondence and job files; on referral to and modification of engineering and architectural drawings; on creation and organization of public relations slide presentations; and on referral to company generated reports. A comprehensive information center with professional retrieval systems, clear organization, collection control, and knowledgeable help in locating and utilizing all materials, can be a critical financial resource and active focal point in the small or medium-sized company. (Author/JVP)

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TOTAL INFORMATION CENTERS

by

Carol Tenopir

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

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TOTAL INFORMATION CENTERS

BY

CAROL TENOPIR
CIBBARELLI AND ASSOCIATES
HUNTINGTON BEACH, CALIFORNIA

Introduction

For years librarians have advocated the conversion of the traditional book-oriented library to an expanded resource center encompassing all types of materials and information. In many library sectors this expansion has been at least philosophically accomplished. Librarians recognize and accept their expanded roles. Public, academic, and special libraries seek to increase their influence, their scope, and their budgets, with public relations campaigns aimed at establishing the "Information Center" as a recognized community force.

Our idea-expansion and public relations efforts are still sadly lacking, however, in the business community. Our influence still is narrow, our importance minimized in non-libraried businesses. Few business people accept the information profession as one that is viable or necessary in the day-to-day operation of their companies and many small and medium-sized businesses see a library as a luxury they cannot afford. Many such businesses rightly believe they cannot cost-justify a traditional library or an expanded resource center in their company. Local public and university collections can satisfy most of their basic outside resource needs, making it difficult to justify in quantitative terms the need for an information center that is limited to reference materials. The materials that have been often overlooked by business people and librarians alike are the many internal items that affect the daily financial operation of the small or medium-sized company.

Correspondence or job files, engineering or architectural drawings, laboratory notebooks or company reports, computer programs or print-outs, and public relations slides or movies undeniably play an important role in the day-to-day operation of businesses. Without such materials a company cannot produce, function, or expand. Millions of dollars are spent annually on the development of these items, yet information professionals have failed to convince most businessmen of the need for effective storage and retrieval of all of these materials. Worse yet, many librarians or information managers have failed to accept responsibility for the full range of these vital information sources.

A bringing together of all information sources in a small or medium-sized company into a total information center is long overdue. A well designed comprehensive information center with professional retrieval systems, clear organization, collection control, and computer-assisted retrieval can be cost justifiable and can become a center of operation in a small or medium-sized company. It is up to us as information professionals to demonstrate the need for and effectiveness of such a system.

Cost Justification

Convincing the business community of the need for information centers in their companies can be best accomplished by speaking to business people in terms they understand--in time and dollar savings. It is not enough for an information professional to feel the need for order and retrieval of information; this need must be conveyed in concrete dollar terms. Idealistic tirades on the information explosion and the professional role of information managers will mean little to a business person. The concrete losses from a lack of information systems and the values of total systems are what must be demonstrated.

As I drive down the freeway, I often imagine the mess inside those thousands of companies I pass that desperately need the services of information managers. I realize how much money each one could save, how much better organized each one's services could become, and how much more effective each one's procedures could be if they were only better internally organized. It is such a feeling of frustration to think how few of them know what could be done for them! If I were to descend upon these companies with an impassioned plea for retrieval systems and information management, they would probably at best humor me until they could usher me outside, and, at worst, throw me out on my ear as a wild-eyed maniac. What they need to see is a business-oriented, professionally assembled presentation of the cost detriments from lack of organization and retrieval of all materials.

The lack of effective retrieval systems can be demonstrated to adversely affect financial operations of companies. Demonstrations using examples of these adverse affects will help to bridge the continued communication gap between business people and librarians. Figures illustrating the high costs incurred when an engineer spends several hours a week randomly searching throughout the company for an engineering drawing; estimates of costs incurred when drawings, company reports, computer programs, or slides have to be redone because the original has been misplaced or forgotten; and examples of law suits pending from a company's failure to properly document laboratory experiments or understand environmental laws can be persuasive arguments for a centralized information center.

Library and information consulting firms attempt to bridge the gap between the business world and the information profession by combining library and business skills and interests, and by presenting those arguments persuasively to businesses. Table I shows examples from a demonstration of the concrete adverse affects resulting from a lack of an effective retrieval system.

Computer Generation

When the need for a comprehensive information center has been established and cost justified, it will do little good if the need for an effective design has not also been demonstrated. Retrieval systems that are general enough to be installed in many companies (thus greatly reducing development costs) yet are flexible enough to handle all types of materials and to meet the needs of a wide variety of businesses will be the most successful systems. These systems clearly cannot be designed by untrained personnel.

Most small or medium-sized companies cannot afford to develop their own computer software for a retrieval system. Often they do not have the computer facilities necessary to run even a book catalog. They may be tempted to settle for the less sophisticated and less satisfactory card catalog and a more limited retrieval system. In a total information center where items are outdated rapidly, frequent updates are necessary, and retrieval accuracy must be high, the manual system will be both unsatisfactory and costly. Table II shows some of the comparisons between computerized and manual catalogs that may be presented in such a case.

Charts plotting the exact costs of the computerized catalog vs. the card catalog are also persuasive presentations. These are made by flow charting all of the tasks involved in cataloging, catalog production, error correcting, and maintenance. The dollar costs for each task are then computed. Since labor, computer, and paper costs are so variable, these charts have not been reproduced here. Table II shows the manual system is much more labor intensive and limited. Comparisons of the on-going costs of establishing and maintaining manual vs. automated systems, combined with the table showing the many advantages of an automated system make a persuasive presentation.

Several computer software packages have been developed for the creation of library systems. Programs that are developed by information professionals should meet the general retrieval needs by all libraries, yet be flexible enough to handle all types of materials and able to bend to the special needs of each unique company. If the result is an economical, yet highly sophisticated and satisfactory retrieval system developmental costs will not have to be borne by each individual business. Runs of the book catalog may be done out-of-house if the contracting company does not have appropriate computer facilities.

TABLE I

1. The average cost to produce an engineering drawing is $500.00.[1]

   If 10 drawings per year have to be redone because the original is either lost or forgotten,

   The lack of an effective retrieval system costs Company X — $ 5,000 per year

2. It can cost $7,800.00 to produce a 10 minute slide/tape presentation.[2]

   If 2 new slide/tape productions have to be redone because the original is either lost or forgotten,

   The lack of an effective retrieval system can cost Company X — $15,600 per year

3. An engineer's average yearly salary is $18,130.[3]

   If Company X has 25 engineers and if each engineer spends an average of 2 hours per week[4] randomly searching throughout the company for uncataloged drawings,

   The lack of an effective retrieval system will cost Company X — $22,788 per year

4. Recently, a government investigation was launched against a pharmaceutical firm[5] when inconsistent data was presented before a Senate Subcommittee. The raw data and experiments were needed for verification, but because the company lacked an effective retrieval system for their laboratory experiment notebooks, 20 FDA investigators for nearly a year had to manually sift through all of the back experiments. This cost had to be born by the pharmaceutical company.

   The lack of an effective retrieval system cost this company — Hundreds of thousands of dollars

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[1] Xerox Corporation Meeting, Challenge '76. Fullerton, CA., October 1976.

[2] Estimate from AV-111, Irvine, California for an 8-10 minute slide/tape production with 50% photographs and 50% graphics.

[3] Current Population Reports. U.S. Bureau of the Census, 1974. Series P-60.

[4] A conservative time estimate according to most engineers and managers in companies we have worked for.

[5] G.D. Searle and Company. See New York Times. Ja 10, 21; Ap. 8,9; N 15, 17, 1976.

5. A computer program conservatively costs $5,000.00 to produce.[6]

   If 2 programs are duplicated because the original capabilities are forgotten,

   The lack of an effective retrieval system could cost Company X $10,000 per year

6. Environmental regulations and government standards are constantly changing. If a company does not have ready access to the latest legislation or updates that affect its industry,

   The lack of an effective retrieval system could result in a lawsuit or a fine costing Company X Thousands or millions of dollars

7. The average yearly salary for a secretary is $6955.00.[7]

   If Company X has 50 secretaries and if each secretary has to spend 2 hours per week searching for past correspondence or job documentation,

   The lack of an effective retrieval system could cost Company X $17,388 per year

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[6]Based on an hourly salary of $25.00 plus computer run time.

[7]Current Population Reports. U.S. Bureau of the Census, 1974. Series P-60.

TABLE II

COMPUTERIZED CATALOG	MANUAL CARD CATALOG
--can be on-line or in book format	--is only in card format
--catalog is intact	--individual cards can get lost
--the computer files & interfiles quickly & without error	--card filing is time consuming and prone to human error
--computer filing rules are straightforward & easy to follow	--ALA filing rules are often confusing to patrons
--multiple copies can be available throughout the company at little additional cost	--copies cannot be made without great expense
--multiple citations may be scanned at once	--each card must be looked at individually
--size is small and compact	--size is unwieldy and awkward
--book catalog requires no special furniture or space	--special furniture and space is required
--errors are corrected only once for each citation	--errors must be corrected on every card (a costly & labor intensive procedure)
--collection updating & weeding are facilitated	--each card of every old item must be pulled
--clerical time is minimal	--clerical time is intensive for typing, filing and correcting
--field size & format are flexible (abstracts may be included & may be searchable)	--abstracts are generally not included and are not searchable
--special searches utilizing Boolean logic may be made	--no special search capabilities
--special bibliographies may be printed on 8½x11" paper	--bibliographies must be compiled and typed by hand
--statistics on collection size, outdated materials, personal copies in library, etc. are generated	--no statistical capabilities
--future applications are limited only by imagination & budget	--no possibility of special capabilities

The following list outlines system features that are desirable in library software design.

--any type of material can be handled (the first section of the call number designates material type)

--different materials may be interfiled in the catalog or may be separated

--dictionary or divided catalogs may be produced

--data fields are lengthy so data need not be abbreviated

--natural languages instead of codes are used

--the vocabulary is controlled with an unlimited number of terms and cross references

--the number of subject headings or added authors is unlimited

--complete cataloging data may be included with each subject entry or an abbreviated form may be chosen

--number of titles and number of volumes is automatically counted

--special searches using Boolean operators may be generated

--bibliographies on 8½x11" paper may be requested, with correct bibliographic citation format

--a thesaurus for each field is generated with each run

--errors are easily identified and corrected

--a book catalog or an on-line file may be chosen

--software is flexible enough to allow changes for specific needs

Handling Materials

Software is not all that needs to be flexible and adaptable in the total information center. Type of storage space, cataloging procedures, classification schemes, subject headings, and maintenance procedures all must be flexible enough to handle many materials and situations. They also must be designed to meet the unique needs of each individual company.

Storage requirements differ with each type of material. Engineering drawings and maps require flat, hanging, or pigeon hole files. Job and correspondence materials require traditional filing cabinets. Company reports or laboratory notebooks need various sizes of shelving and often are best retroactively microfilmed. Slides, movies, and tapes all necessitate appropriate storage cabinets of various sizes and shapes. Awareness of the necessity for and the best styles of all of these storage facilities is important in effective organization of the total information system. Since materials will be gathered from many departments, costs for these storage facilities will be spread throughout the company. Much existing storage equipment in a company will be useful so the amount of each type of material in the center will determine how much additional equipment must be purchased. General knowledge about a wide variety of storage facilities is necessary, but decisions as to how much and what type are purchased must be made according to the needs and budget of the individual company.

Cataloging procedures, classification schemes and thesauri must also be flexible and adaptable in the total information system. Existing strict rules are often not appropriate to best meet a company's total information needs. Procedures that can bend to meet the needs of the patrons and materials are the most effective ones. General principles of cataloging and classification must not be totally abandoned either, however.

Unlike resource materials, many special materials are not "browsable". It is not practical to thumb through many large architectural drawings, through slides and movies, or through laboratory experiments. Many items such as job or correspondence files are too easily disarranged to make browsing feasible. The classification scheme assigned to these items is therefore not nearly as critical as the numerous subject access points in the catalog. Classification may be by originating agency, type of drawing, size, job number, or subject. An accession number following the first location code should be used to uniquely identify each item. Classification schemes need not be the same for each type of material in the total information center, but they must be straightforward and easy to understand. They should best reflect the storage, shelving, and retrieval of the various materials.

Cataloging schemes and subject headings are the most critical elements in the successful total information center. They must be developed to encompass all materials and to reflect the retrieval needs of all people in the company. A good way to ensure successful retrieval for non-library oriented patrons is to assign numerous descriptive subject headings and to make liberal use of cross references. A thesaurus developed with the company's needs and language in mind will also ensure successful retrieval. Since

much of the collection is critical in the financial operation of the company, consistent retrieval of all items on a certain topic or of a certain type is essential. Key word indexing does not provide the strict vocabulary controls necessary for this needed high degree of accuracy. Manual catalogs also do not provide the vocabulary control and correcting procedures needed.

Assignment of all pertinent descriptors is important. One of the main advantages of this total information center over records management facilities is the high degree of retrieval accuracy ensured by the complete cataloging of all materials and the sophisticated retrieval capabilities. An engineering drawing, for example, should be retrievable by all of the following points:

--the fact it is a drawing

--author(s) of the drawing

--geographic area (including tract numbers, city sector, etc.)

--all subjects shown in the drawing

--all functions of the drawing (i.e. grading, street improvement)

--job numbers assigned

--the subjects of the drawing

--any other access points used in the particular company

Scale, date, type of material and size of drawing are carried in the body of the citation and may also be retrievable.

Slide shows or films should be retrievable by the material type, by the author and issuing agency, by the purpose of the show and what audience it is aimed for, and by all pertinent subject headings. Job files may be grouped in more general subject categories, but these grouped files should be retrievable by numerous subject headings, by job numbers, by geographic area, and by important authors or agencies.

Ideally, a company with a total information center will have total access to and complete retrieval of all information sources in that company. Access points should be varied, retrieval language easy to understand, arrangement orderly and by type of material, and items stored properly and accessible. The handling of numerous types of materials is greatly simplified if they are stored by material type in clearly marked storage facilities, but are cataloged together with full subject coverage. For cataloging purposes it is not necessary to dwell on the differences of materials; instead, the similarities necessary for retrieval should be emphasized.

Management

When a retrieval system is well designed, the management of a total information center is greatly simplified. Procedural manuals documenting all cataloging, classification and handling procedures should be available. Charts of the flow of all information center tasks with detailed descriptions of how to perform the tasks ensure continued success of the system. System documentation for every function has been neglected in many libraries. In the small or medium-sized company information center where procedures are varied and professional help may be limited, this documentation is a necessity.

After the system has been established and materials cataloged, many companies cannot afford or do not need a full-time professional information manager. If retrieval of information has been greatly simplified by a customized thesaurus based on the language commonly used in the company and by full interactive cataloging of all materials, a knowledgeable clerk can perform the daily functions of the center. Much of the classification and cataloging chores can be done by this person also, but an overall information supervisor is important in maintaining quality control. Based on the size and activity of the information center, professional time should be assigned for maintenance, growth, and overall control of the facility. Decisions regarding new types of materials, software modifications or changes, procedural revisions, and any out of the ordinary situation should be handled by an information professional who is totally familiar with the system and with the principles of information management.

A growth in the information profession's influence in the business community is possible if the correct approaches are followed. A bringing together of all information sources in a small or medium-sized company into a total information center can economically benefit the business. As information professionals we must continue to improve public relations techniques to demonstrate the benefits of such systems, we must continue to design the most effective and least costly information systems for these companies, and we must constantly realign our own thinking to attract and best serve these neglected materials and clients.